

AMENDMENTS TO CLAIMS

Claim 1 (presently amended): A method for producing a foamed article, comprising the steps of:

providing an epoxy component, said epoxy component comprising an epoxy resin, a blowing agent having a thermoplastic shell filled with a solvent core, and a thixotropic filler, said epoxy component being provided in a substantially liquid form;

providing an amine component, said amine component comprising an amine and a thixotropic filler, said amine component being provided in a substantially liquid form; and

combining said epoxy component in its substantially liquid form and said amine component in its substantially liquid form thereby forming to form a reactive mixture and allowing said thermoplastic shell filled with a solvent core to soften from amine-epoxy exotherm and then expand due to gas pressure from said solvent core without addition of external heat.

Claim 2 (original): The method for producing a foamed article recited in claim 1, wherein said epoxy resin comprises from about 35% to about 99% by weight of said reactive mixture.

Claim 3 (original): The method for producing a foamed article recited in claim 1, wherein said epoxy resin and said thixotropic filler are combined prior to adding said blowing agent.

Claim 4 (original): The method for producing a foamed article recited in claim 3, further including the step of combining said blowing agent with an inert filler prior to combining said blowing agent with said epoxy resin and said thixotropic filler.

Claim 5 (original): The method for producing a foamed article recited in claim 1, wherein said reactive mixture further includes an additive selected from the group consisting of carbon black, ceramic microspheres, polymer particles, rubber particles, ceramic particles, inert mineral particles and combinations thereof.

Claim 6 (original): The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a rail member, a frame member, a door assembly, a rocker, and a frame cross member.

Claim 7 (original): The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle window frame, a vehicle deck lid, a lift gate, a vehicle pillar assembly, and a vehicle hatch.

Claim 8 (original): The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle roof system, a roof bow, a roof rail, and a roof header.

Claim 9 (original): The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a fender assembly, a bumper, and a front end structure.

Claim 10 (presently amended): A method for producing a foamed article, comprising the steps of:

providing an epoxy component, said epoxy component comprising an epoxy resin, a thixotropic filler and a blowing agent having a thermoplastic shell filled with a solvent core, the thixotropic filler being an aramid pulp, said epoxy component being provided in a substantially liquid form;

providing an amine component, said amine component comprising a cycloaliphatic amine curing agent and a thixotropic filler, the thixotropic filler including ~~being~~ an aramid pulp, said amine component being provided in a substantially liquid form; and

combining said epoxy component in its substantially liquid form and said amine component in its substantially liquid form thereby forming to form a reactive mixture and allowing said thermoplastic shell filled with a solvent core to soften from amine-epoxy exotherm and then expand due to gas pressure from said solvent core without addition of external heat.

Claim 11 (original): The method for producing a foamed article recited in claim 10, wherein said epoxy resin comprises from about 35% to about 99% by weight of said reactive mixture.

Claim 12 (original): The method for producing a foamed article recited in claim 10, wherein said epoxy resin and said thixotropic filler are combined prior to adding said blowing agent.

Claim 13 (original): The method for producing a foamed article recited in claim 10, further including the step of combining said blowing agent with an inert filler prior to combining said blowing agent with said epoxy resin and said thixotropic filler.

Claim 14 (original): The method for producing a foamed article recited in claim 10, wherein said reactive mixture further includes an additive selected from the group consisting of carbon black, ceramic microspheres, polymer particles, rubber particles, ceramic particles, inert mineral particles and combinations thereof.

Claim 15 (original): The method for producing a foamed article recited in claim 10, further comprising the steps of placing the reactive mixture in the cavity of an automotive vehicle.

Claim 16 (original): The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a rail member, a frame member, a door assembly, a rocker, and a frame cross member.

Claim 17 (original): The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle window frame, a vehicle deck lid, a lift gate, a vehicle pillar assembly, and a vehicle hatch.

Claim 18 (original): The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle roof system, a roof bow, a roof rail, and a roof header.

Claim 19 (original): The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a fender assembly, a bumper, and a front end structure.

Claim 20 (presently amended): A method for producing a foamed article, comprising the steps of:

providing a substantially liquid epoxy component that includes:

- i) an epoxy resin;
- ii) a blowing agent having a thermoplastic shell filled with a solvent core; and
- iii) a thixotropic filler wherein the filler includes aramid pulp;

providing a substantially liquid amine component that includes:

- i) a cycloaliphatic amine curing agent;
- ii) an amine that is less reactive than the cycloaliphatic curing agent; and
- iii) a thixotropic filler wherein the filler includes aramid pulp;

combining and dispensing said substantially liquid epoxy component and said substantially liquid amine component at around room temperature to form a reactive mixture wherein:

- i) the epoxy component and the amine component are formed as separate liquids prior to forming the reactive mixture;

- ii) the epoxy component and the amine component react together exothermically to produce heat; and
- iii) the heat causes the thermoplastic shell filled with a solvent core to soften and expand due to gas pressure from said solvent core without addition of external heat;

providing the reactive mixture within an automotive body cavity contemporaneously with the formation of the mixture or shortly thereafter; and allowing the reactive mixture to cure to form said foamed article wherein said foamed article is capable of substantial plastic deformation after curing without substantial loss of strength modulus and wherein said foamed article has a glass transition temperature greater than 200° F after such plastic deformation.

Claim 21 (new): The method for producing a foamed article recited in claim 1, wherein said thixotropic filler of said epoxy component and said thixotropic filler of said amine component are selected from silica, a calcium carbonate or an aramid.

Claim 22 (new): The method for producing a foamed article recited in claim 1, wherein said thixotropic filler of said epoxy component and said thixotropic filler of said amine component are an aramid are aramid pulp.

Claim 23 (new): The method for producing a foamed article recited in claim 1, wherein said thixotropic filler of said epoxy component and said thixotropic filler of said amine component are a calcium carbonate selected from a precipitated calcium carbonate or a coated calcium carbonate.

Claim 24 (new): The method for producing a foamed article recited in claim 1, wherein said thixotropic filler of said epoxy component and said thixotropic filler of said amine component are a silica selected from fumed silica or pyrogenic silica.